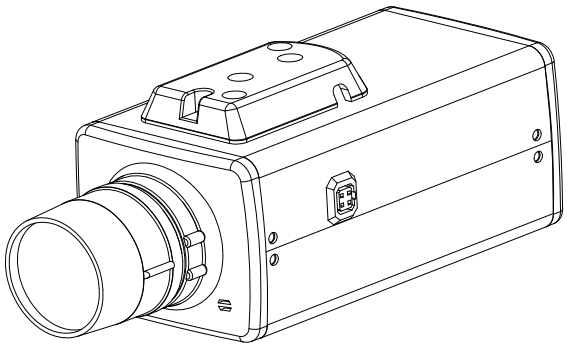
OKINA USA

**WDEM-7680** **680 TVL**

**WDEM-7610** **610 TVL**

# Hyper Wide Dynamic Camera - Effio WDR with Mechanical IR Cut Filter (ICR)



*User Manual*

Thanks for purchasing our product. Before operating the unit, please read the instructions carefully and keep this manual for future reference.

## Safety Warnings

⚠ **1. Read this manual carefully before installing the unit**

Please read this manual first for correct installation and operation.

⚠ **2. Never install the camera on a ceiling that cannot hold its weight**

The product may fall down and cause damages.

⚠ **3. Never install the camera near electric or magnetic fields**

Install the camera away from TV, radio transmitter, magnet, electric motor, transformer, audio speakers since the magnetic fields generate from above devices would distort the video image.

⚠ **4. Never install or use the camera in areas exposed to water, oil or gas**

The water, oil or gas may result in operation failure, electric shock or fire. Do not use this unit near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.

⚠ **5. Never face the camera toward the sun**

Direct sunlight or severe ray may cause fatal damage to sensor and internal circuit.

⚠ **6. Power Cord Protection**

Touching the wet power cord with hands or touching the power cord with wet hands may result in electric shock. Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, playing particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

⚠ **7. Attachments**

Do not use attachment not recommended by the product manufacturer as they may cause hazards.

⚠ **8. Object and Liquid Entry**

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind onto the product.

⚠ **9. Do not operate the camera in environments where the temperature, humidity or power source is beyond the specified ones**

Use the camera in suitable environments where the temperature is within -10˚C~50˚C and humidity below 90%. Use the input power source as the specifications listed.

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⚠ **10. Cleaning**

Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

⚠ **11. Never disassemble the camera nor put impurities in it**

Disassembly or impurities may result in trouble or fire.

⚠ **12. Stop using when the product emits smoke or abnormal heat**

⚠ **13. Servicing**

Do not attempt to repair this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

⚠ **14. Retain Instructions**

THE SAFETY AND OPERATING INSTRUCTIONS SHOULD BE RETAINED FOR FUTURE REFERENCE.

## Warranty

OKINA USA products are covered under warranty for one year from the date of purchase. The warranty will automatically be voided if any of the following occurs:

**1. Camera sticker is removed**
If the camera sticker is removed, we will not be able to confirm any information regarding when and where the product was purchased. We have no other way to verify the purchase record without the serial number on the camera sticker; therefore, it should not be removed.

**2. Camera is modified in any way**
If the camera is scratched, damaged, or modified in a manner not described in this manual, the warranty will be voided immediately. It is the customer's responsibility to keep the camera in good condition.

**3. Video or power cable is cut**
The video cable and the power cable should not be tampered with. Cutting or modifying of the cables will result in termination of the warranty.

**NOTE:**
The information in this manual was up-to-date when published. The manufacturer reserves the right to revise and improve its products. All specifications are therefore subject to change without notice.

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# 1. Introduction

WDEM-7680 and WDEM-7610 are built with Sony's latest image processor, this super-wide dynamic camera has the capability of achieving resolutions of over 680 TVL or 610TVL respectively. The features include 2-D and 3-D noise reduction, sense up, spot removal, strong-light suppression, intelligent motion, face detection and OSD functions. The camera also comes with 510x or 256x digital zoom, an intelligent auto exposure compensation system and an RS-485 remote control. WDEM-7680 and WDEM-7610 reproduces nearly perfect images like no other.

## 1.1 Main Features

**WDEM-7680**

- Color: 680 TVL, B/W: 700 TVL
- Powerful 510x WDR (54dB)

**WDEM-7610**

- Color: 610 TVL, B/W: 630 TVL
- Powerful 256x WDR (53dB)

- 1/3" Hyper Wide Dynamic Color Camera, Effio WDR DSP
- Color: 0.03 Lux @ F1.0, B/W: 0.01 Lux @ F1.0, Sense-up: 0.0001 Lux@F1.0
- Mechanical IR Cut Filter (ICR)
- Multi-Language OSD Control / RS485 Control
- Ideal for Backlight Environments
- 2D/3D Noise Reduction & Sense Up (512x) Functions
- High Contrast Images
- Face Detection of up to 4 faces
- E-zoom Function (1~256x)
- Advanced Motion Detection Function
- Polygonal Mosaic Privacy Mask
- Freeze / Timer Clock
- 12V DC / 24V AC, 3.0W

## 1.2 Content List

- One (1) WDEM-7680 or WDEM-7610 camera
- One (1) Female DC Connector
- One (1) CS Mount Ring
- One (1) DC Plug
- One (1) Allen Wrench
- One (1) Warning Sign Sticker
- One (1) User Manual
- One (1) CD

***** For any returns, please include all components listed above with original packaging in **Resalable Condition**. **Absolutely No Returns** will be accepted if any component is missing/damaged or if any cable is cut or tampered with.

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## 1.3 Specifications

| PIC | T-409 | T-411 |
|---|---|---|
| **Model** | **WDEM-7680** | **WDEM-7610** |
| **Image Sensor** | 1/3" Sony Double-speed (Double-density) CCD | |
| **Number of Total Pixels** | NTSC: 1028(H)x508(V)<br>PAL: 1024(H)x596(V) | NTSC: 811(H)x508(V)<br>PAL: 795(H)x596(V) |
| **Resolution ; DSP** | Color: 680 TVL, B/W: 700 TVL<br>Sony Effio WDR | Color: 610 TVL, B/W: 630 TVL<br>Sony Effio WDR |
| **Minimum Illumination** | Color: 0.03 Lux @ F1.0; B/W: 0.01 Lux @ F1.0; Sense-up: 0.0001 Lux @ F1.0 | |
| **Wide Dynamic Range** | 510x Normal Camera (54dB) | 256x Normal Camera (53dB) |
| **Video Output** | 75Ω (BNC), S-Video (Y/C) | |
| **Signal to Noise Ratio** | More than 52dB (AGC off, Weight on) | |
| **Gamma Correction** | 0.45 | |
| **Mechanical IR Cut Filter (ICR)** | Automatically Switches (Switching lux level can be adjusted) | |
| **Menu** | OSD Control or by RS485 Control | |
| **Title** | TITLE (LOCATION) | |
| **Synchronizing System** | INTERNAL / LINE CLOCK | |
| **Digital Day&Night Mode** | COLOR / B&W / AUTO / EXT / SCHEDULE | |
| **Electronic Shutter** | AUTO(1/50(60)~1/100,000sec.) / SCHEDULE or DAY&NIGHT / MANUAL: 1/50(60), FL 1/120(100), 1/200, 1/250, 1/350, 1/500, 1/750, 1/1,000, 1/1,500, 1/2,000, 1/3,000, 1/4,000, 1/10,000, 1/30,000, 1/60,000, 1/100,000 sec. | |
| **Automatic Gain Control** | AUTO / MANUAL / OFF | |
| **White Balance** | ATW / AWB / AWC (Push Lock) / MANUAL /<br>OUTDOOR(1800°K~10500°K) / INDOOR(4500°K~8500°K) / ANTI CR | |
| **Back Light Compensation** | WDR / BLC / OFF | |
| **Flickerless** | ON / OFF | |
| **Dynamic Noise Reduction** | 3D / 2D | |
| **Sense Up** | AUTO (Limit x2~x512) / OFF | |
| **Face Detection** | 4 Face Detection | |
| **Language** | ENGLISH / TRADITIONAL CHINESE / SIMPLIFIED CHINESE | |
| **E-Zoom** | X1~x256, Pan / Tilt Adjustable | |
| **Motion Detection ; Privacy** | ON / OFF (24x16 Zones, Alarm) ;<br>ON / OFF (16 Zones Programmable, Polygonal Mosaic) | |
| **Timer Clock** | Year/Month/Date, Hour/Minute/Second | |
| **Camera Control Interface** | RS485 Interface OSD Control by Pelco-D, Pelco P | |
| **Automatic IRIS ; Connector** | VIDEO / DC ; D4 IRIS Jack | |
| **Lens Mount** | C / CS mount (With Adaptor) | |
| **Lens** | Not Included | |
| **Power Input ; Consumption** | 12V DC / 24V AC (10.8~39V DC / 24V AC) ; 3.0W | |
| **Operation ; Storage Temp.** | 14˚F~122˚F ; -4˚F~140˚F / -10˚C~50˚C ; -20˚C~60˚C | |
| **Operation ; Storage Humidity** | Maximum: RH80% ; RH90% | |
| **Dimensions** | 2.36”(W) x 1.97”(H) x 4.68”(L) / 60mm(W) x 50mm(H) x 119mm(L) | |
| **Net Weight** | 0.77 lbs / 350g | |

* Specifications are subject to change without notice.

PAL version also available.

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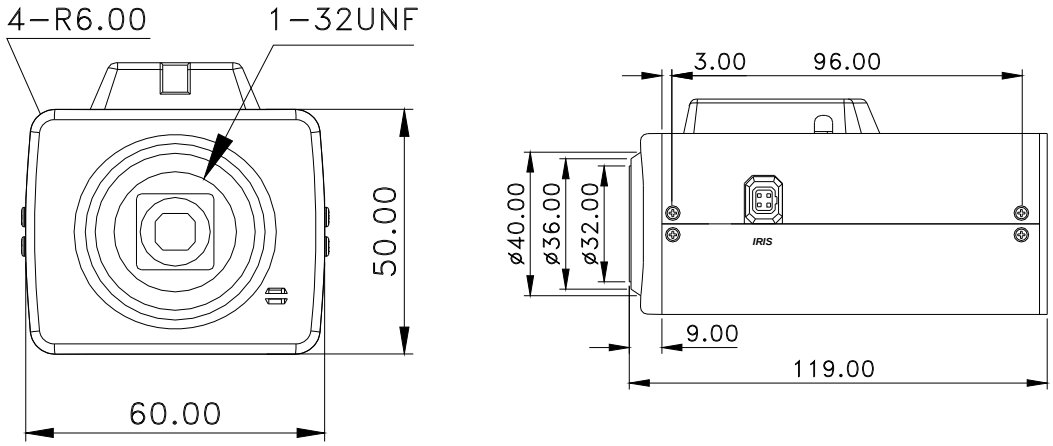
# 2. Camera Overview

## 2.1 Dimensions

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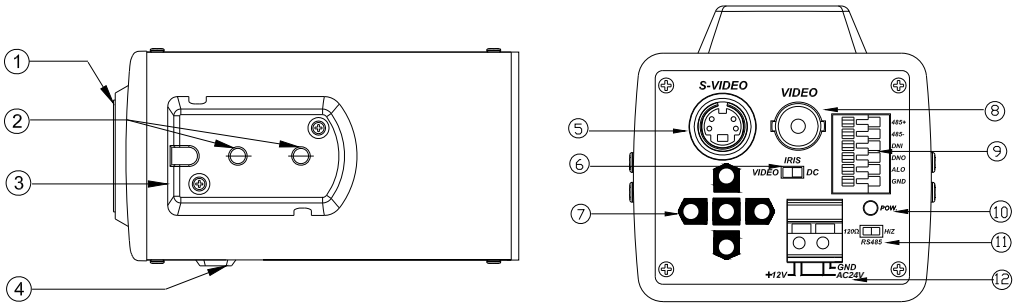
## 2.2 Description of Camera Parts



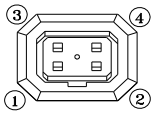

(1) **Lens Mount**
This mount is used to install a CS-mount lens. CS-adaptor ring is required when using a C mount lens.

(2) **Camera Mounting Screw Holes**
Screw hole for mounting the camera.

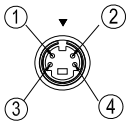
(3) **Mount Adaptor**
The adaptor can be attached onto the top or the bottom of the unit.

(4) **Auto Iris Lens Connector (4-pin type)**
The lens connector supplies the auto-iris lens (not supplied) with DC control signal.

| PIN NO. | VIDEO | DC |
|---|---|---|
| 1 | DC + 12V | CONTROL - |
| 2 | NC | CONTROL + |
| 3 | IRIS | DRIVE + |
| 4 | GND | DRIVE - |




(5) **S-Video Output Terminal**
Separate Y (brightness) and C (color) signal are outputs from this terminal to obtain better video quality at a video monitor.
1. C signal: 0.3V (p-p), 75Ω, unbalance
2. Y signal: 1.0V (p-p), 75 Ω, unbalance, negative synchronizing
3. C signal Ground
4. Y signal Ground




(6) **Iris Mode Selection Switch**
Select DC or VIDEO mode according to the lens.

(7) **OSD Control Buttons**
ENTER button
UP & DOWN buttons
LEFT & RIGHT buttons

(8) **Video Connector**
Video can be outputted via this BNC connector (75Ω).

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(9) **Communication Connectors**

1. RS485+
2. RS485-
3. Day & Night External Input (controlled by external infrared illuminator)
4. Day & Night Output
5. Alarm Out
6. Ground

(10) **Power Input Indicator Light**

When the camera is connected to a power source, the indicator light will be on.

(11) **RS485 Terminal Impedance Switch**

Set the first and the last equipment terminal impedances as 120Ω and set the rest parallel connection equipment in the middle as HiZ to obtain the best transmitting status.

(12) **Power Input Terminal**

Connect the power input of 12V DC / 24V AC (10.8~39V DC / 24V AC).

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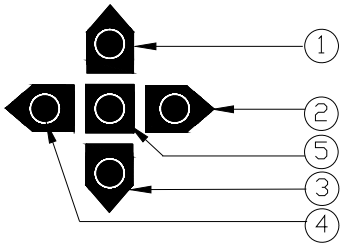
# 3. OSD Operation

## 3.1 OSD Control Buttons




① **UP**
Use this button to move the cursor upwards to the desired item.

② **RIGHT**
Use this button to move the cursor to the right to select or to adjust the parameters of the selected item. The parameter increases when the right button is pressed.

③ **DOWN**
Use this button to move the cursor downwards to the desired item.

④ **LEFT**
Use this button to move the cursor to the left to select or to adjust the parameters of the selected item. The parameter decreases when the left button is pressed.

⑤ **ENTER**
Use this button to display the main menu, to confirm and to enter the submenus when they're available. Items with "↵" symbol in the end contain sub-menus. For further settings of those items, select the desired item with the button ▲ or ▼ and press the **ENTER** button to bring up the sub-menu and edit.

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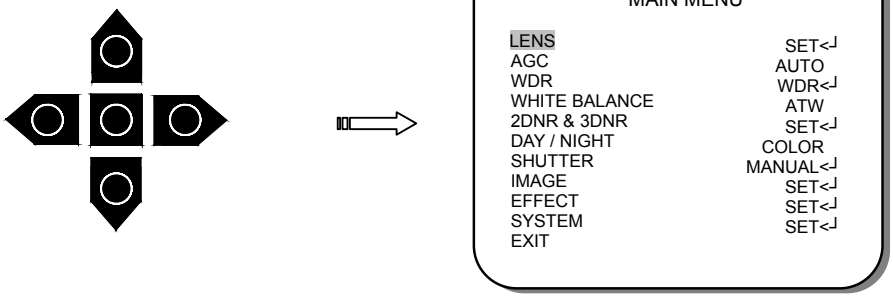
## 3.2 OSD Operation




**1. Start to operate the OSD menu**

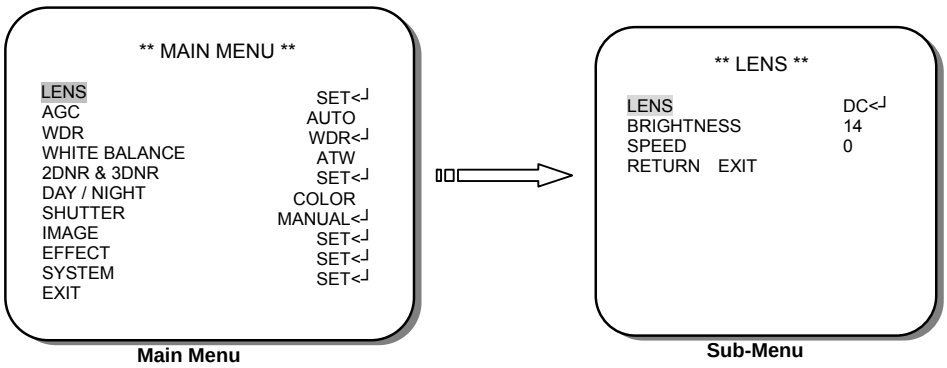
Press the **ENTER** button to bring up the OSD main menu to start operating OSD menus.

**2. Select items with the cursor buttons**

- Use buttons ▲ and ▼ to move the cursor up and down.
- Use buttons ◄ and ► to switch the modes or to adjust the parameters or the values of the settings.

**3. Switch to the sub-menu**

Items with "↵" symbol in the end contains sub-menus. For further settings of those items, select the desired item with the button ▲ or ▼ and press the **ENTER** button to bring up the sub-menu and edit.




**Main Menu** **Sub-Menu**

**4. Return to the previous page**

Select **RETURN** and press the **ENTER** button to return to the previous page.

**5. Exit the OSD menu**

Select **EXIT** with the button ▲ or ▼ and press the **ENTER** button to exit the OSD menu.

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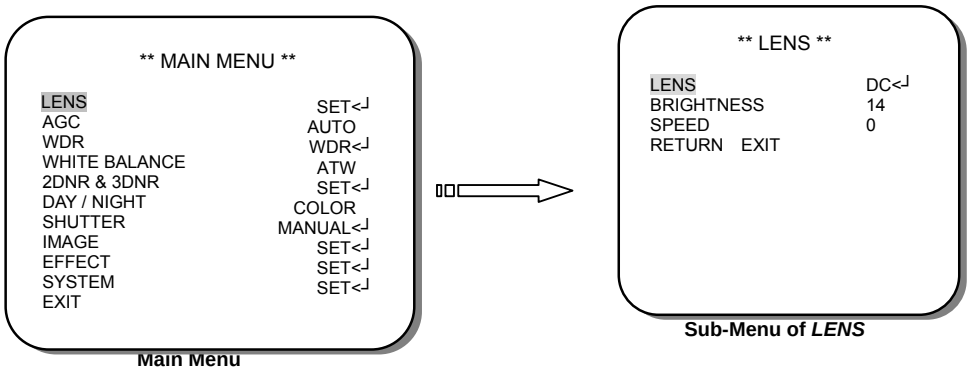
# 4. Configuration

## 4.1 LENS

When the MAIN MENU is displayed on the screen, use the UP and DOWN buttons to the *LENS* and press the ENTER button to do further setups.




**Main Menu** **Sub-Menu of *LENS***

***LENS***

- When the DC LENS is in use, push IRIS SWITCH on the control board to DC, and the LENS status on the menu will be displayed as DC.
- When the VIDEO LENS is in use, push IRIS SWITCH on the control board to VIDEO, and the LENS status on the menu will be displayed as VIDEO.

***BRIGHTNESS***

When the LENS MENU is displayed on the screen, use the UP and DOWN buttons to the *BRIGHTNESS* and use LEFT and RIGHT buttons to adjust the screen brightness from level *0* to *63*.

***SPEED***

The range of the SPEED can be set from -31 to 32. The speed of DC Lens is in direct ratio to the number you set.

**NOTE**:
The *SPEED* function will not work when the LENS set to *VIDEO*.

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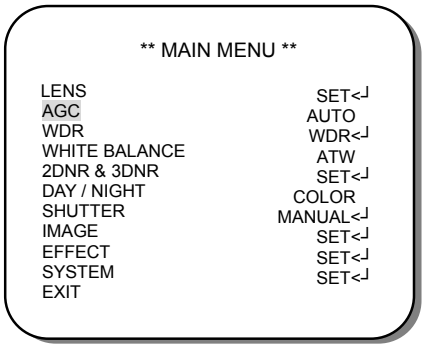
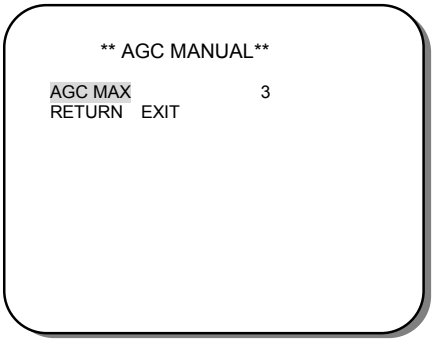
## 4.2 AGC

When the MAIN MENU is displayed on the screen, use the UP and DOWN buttons to the *AGC* and press the ENTER button to do further setups.




There're 3 options under *AGC*: *AUTO, OFF* and *MANUAL*.

***AGC MAX***




1. Select the *AGC* and press LEFT and RIGHT buttons to adjust the *AUTO GAIN CONTROL* settings. Options are *AUTO*, *OFF*, and *MANUAL.*
2. There's a submenu under the mode *MANUAL*, press ENTER button to do further setups. The *AGC MANUAL* range under the *MANUAL* mode can be set from *0* to *15*.
3. The higher the number, the brighter the screen can be. And the noise will also be higher.

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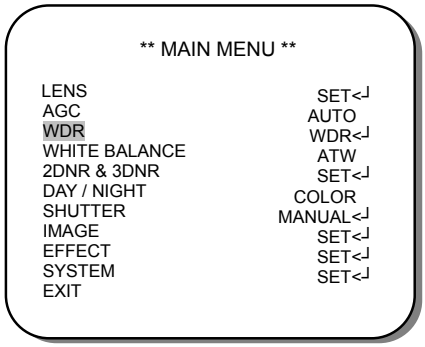
## 4.3 WDR

1. When the MAIN MENU is displayed on the screen, use the UP and DOWN buttons to *WDR* and press the ENTER button to do further setups.




There're 3 modes under *WDR* function: *WDR*, *BLC*, and *OFF*.

2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.

***WDR* (Wide Dynamic Range)**

When there are both bright and dark areas at the same time, selecting this mode makes both areas distinctive.

***LEVEL***

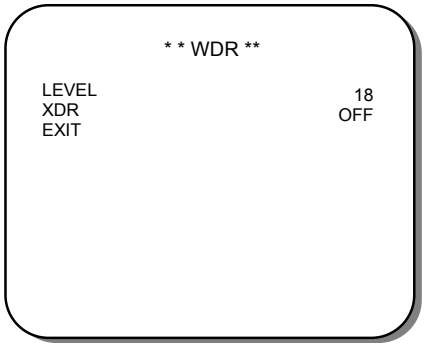
Use the LEVEL function to decrease the brightness of the bright area.

Level: 1~32

***XDR***

Use the LEVEL function to increase the brightness of the dark area.

Level: OFF~15

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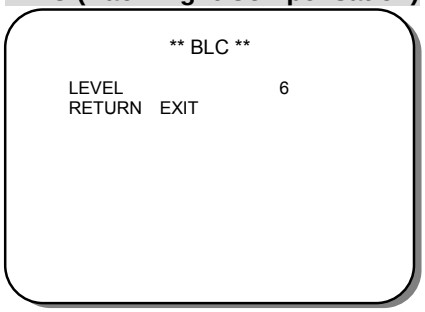
### **BLC* (Back Light Compensation)




Options under this mode are

Level : 1~14.

**Sub-Menu under *BLC* mode.**

Even when there is a massive backlight behind the object, bright images of the background and the object can still be captured by selecting the *BACKLIGHT* mode.
Level: 1~14

### **OFF*

When set as *OFF*, there'll be no wide dynamic range.

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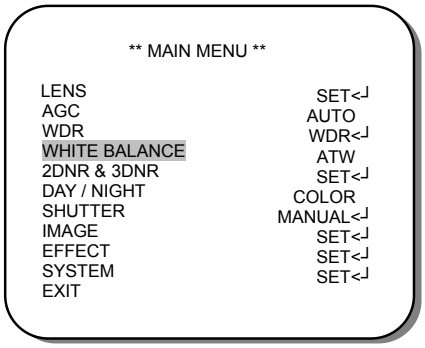
## 4.4 WHITE BALANCE Control

The screen color can be adjusted by using the WHITE BALANCE function.

1. Please use the UP and DOWN buttons to *WHITE BALANCE* on the MAIN MENU and press the ENTER button to do further setups.
2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.




There're 6 modes under this function: *ATW, AWB, AWC (Push Lock), MANUAL, OUTDOOR, INDOOR* and *.ANTI CR*.

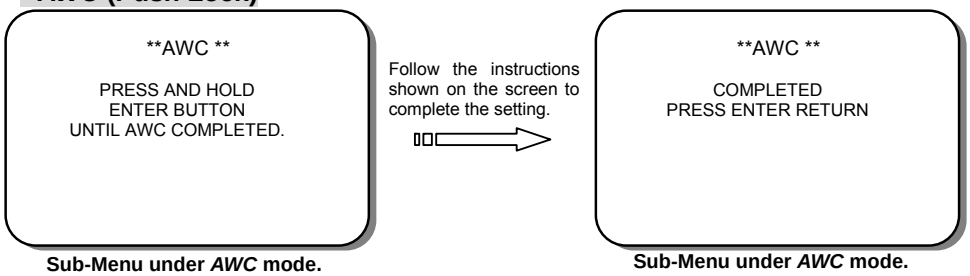
***ATW (Auto Tracking White Balance)**

This mode can be used within the color temperature range from 1800°K to 10500°K (e.g., around fluorescent lights, outdoors, around sodium vapor lamps or inside tunnels).

***AWB (Auto White Balance)**

Select this to allow the camera automatically adjust the white balance under all conditions.

*** AWC (Push Lock)**




**Sub-Menu under *AWC* mode.** **Sub-Menu under *AWC* mode.**

To find the optimal setting for the current luminance environment in this mode, point the camera towards a sheet of white paper and press the ENTER button. Whenever the condition changes, readjust it.

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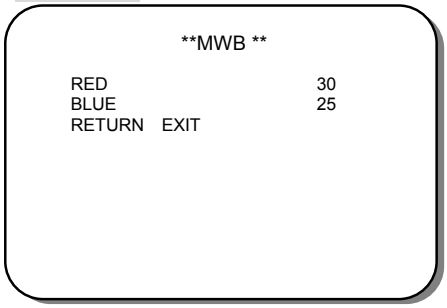
***MANUAL***




RED color value ranges from *0* to *255*.
BLUE color value ranges from *0* to *255*.

**Sub-Menu under *MWB* mode.**

The manual adjustment mode enables a more precise adjustment. Increase and/or decrease the red and blue color values according to the color changes of the object to set the suitable color temperature.
RED color vale ranges from *0* to *255*.
BLUE color value ranges from *0* to *255*.

***OUTDOOR***

Select this when the color temperature is around 6300°K.

***INDOOR***

Select this when the color temperature is around 3200°K (when surrounded by sodium lights).

***ANTI CR* (Color rolling suppression)**

Select to set the white balance mode to the ***ANTI CR*** mode.

**NOTE**:
The ***White Balance*** can not fully function under the following conditions. When the following occurred, please select ***AWC*** Mode.
< When there's a higher temperature surrounded the object.
< When there's darkness surrounded the object.
< When there's a fluorescent light surrounded the object or where the light changes all the time.

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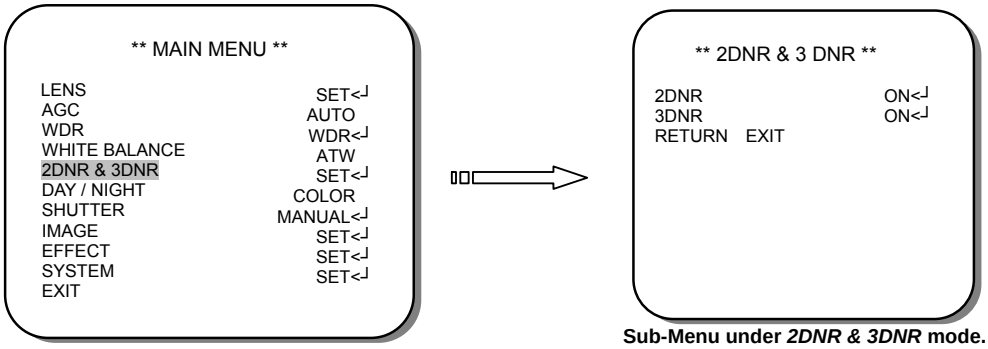
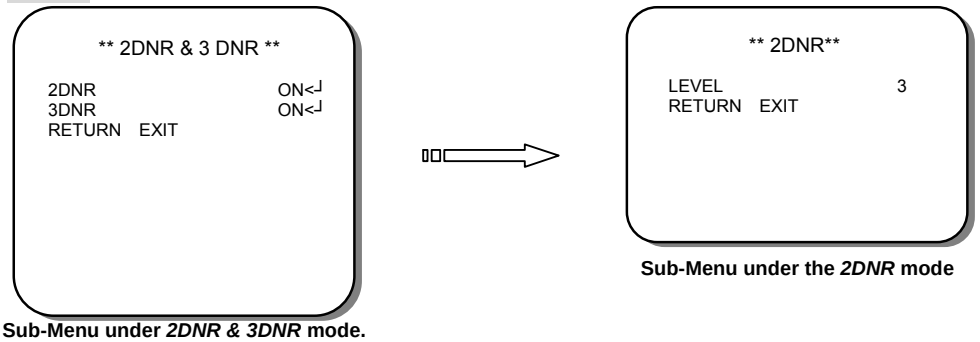
## 4.5 2D &3D NR (Dynamic Noise Reduction)




**Sub-Menu under *2DNR & 3DNR* mode.**

1. When the noise level is reduced, the camera performance can apparently be improved. When recording digitally, the image file size can be lessened by selecting the noise reduction. As the level of gain changes, the background noise in the low light level decreases automatically.
2. Please use the UP and DOWN buttons to 2*DNR & 3DNR* on the MAIN MENU and press the ENTER button to do further setups.
3. Please select the mode you would like to set by pressing the UP and DOWN buttons.

***2DNR***




**Sub-Menu under *2DNR & 3DNR* mode.**

**Sub-Menu under the *2DNR* mode**

•*ON*: When the *2DNR* is set to *ON*, there's a submenu available for level adjustment, ranged from 1 to 4. The higher the level, the more noise can be reduced but sharpness will decrease.

•*OFF:* When the *2DNR* is set to *OFF*. Noise will not be reduced.

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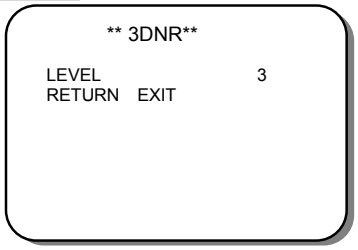
***3DNR***




**Sub-Menu under the *3DNR* mode**

•*ON*: When the *3DNR* is set to *ON*, there's a submenu available for level adjustment, ranged from 0 to 15. The higher the level, the more noise can be reduced but moving objects be blurred in low illumination condition.

•*OFF:* When the *3DNR* is set to *OFF*. Noise will not be reduced.

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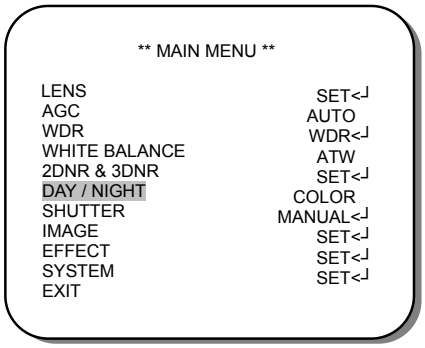
## 4.6 DAY/NIGHT

The camera can be set in *Color* or *B/W* mode in the *Day/Night* function.




There're 5 modes under this function: *COLOR, B&W, AUTO, EXTERNAL, SCHEDULE*.

1. Please use the UP and DOWN buttons to *DAY/NIGHT* on the MAIN MENU and press the ENTER button to enter.
2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.

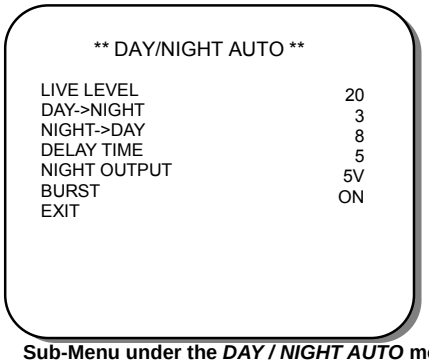
***COLOR**

The COLOR / DAY mode.

***B&W**

The BLACK & WHITE / NIGHT mode.

***AUTO**




**Sub-Menu under the *DAY / NIGHT AUTO* mode**

The camera will switch to *DAY/Color* mode or *NIGHT/B&W* mode according to the set value.

•*LIVE LEVEL*: This indicates the current light level.

•*DAY→NIGHT*: When the camera detects the current light level is lower than the set value, it'll switch from *DAY* mode to *NIGHT* mode. Settings can be set from 6 to 32.

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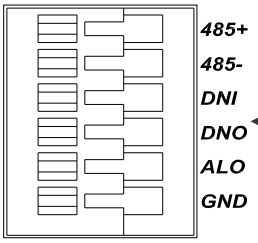
•*NIGHT→DAY*: When the camera detects the current light level is higher than the set value, it'll switch from *NIGHT* mode to *DAY* mode. Settings can be set from 1 to 27.

**NOTE:**
The setting differences between DAY →NIGHT and NIGHT→DAY should be more than 5, or the camera will keep switching from DAY →NIGHT and NIGHT→DAY constantly.

•*DELAY TIME:* Sometimes there's only a sudden and short light level change. Delay time can be set to avoid switching too fast. The camera will switch the mode after the set DELAY TIME passed. DELAY TIME can be set from 0 to 255 seconds.

•*NIGHT OUTPUT*

| OUTPUT / DNO / SYSTEM | **GND** | **5V** |
|---|---|---|
| **COLOR** | 5V | GND |
| **B&W** | GND | 5V |




When it's under B/W mode, the infrared illuminator can be triggered to be on, via DNO pin of the communication connector.

•*BURST :* Turn the *BURST* function off to reduce the color noise under B&W mode. However, not every DVR machines can receive video signals without the color burst signals. If the camera cannot switch back to COLOR mode from B&W mode, please turn the BURST function on.

**NOTE:**
The *BURST* function is adjustable under *B&W*, *EXTERNAL* and *SCHEDULE* mode.

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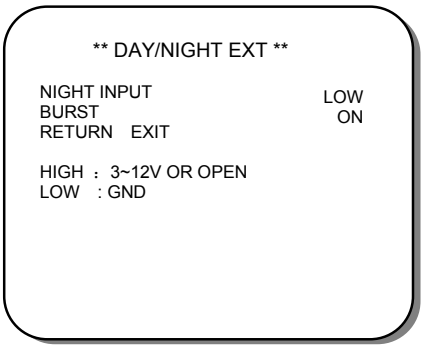
***EXTERNAL***




**Sub-Menu under the *DAY / NIGHT EXTERNAL* mode**

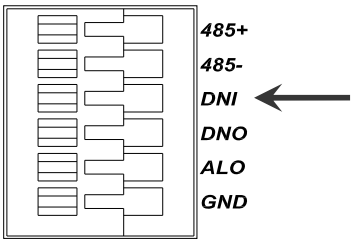
EXTERNAL mode allows the user to switch the DAY/NIGHT mode with external signals. For example, you can synchronize the DAY/NIGHT mode between the camera and the infrared LED illuminator.

For the camera with the light sensor, it is suggested to set the DAY/NIGHT mode to EXTERNAL to ensure the best result.

NIGHT INPUT: Select input level.
LOW : It will be the COLOR mode if the input signal is HIGH. On the contrary, it will be the B&W mode.
HIGH : It will be the B&W mode if the input signal is HIGH. On the contrary, it will be COLOR mode.

HIGH ：3~12V or OPEN
LOW ：GND

| INPUT / SYSTEM / DNI | **LOW** | **HIGH** |
|---|---|---|
| **HIGH** | COLOR | B&W |
| **LOW** | B&W | COLOR |




When the external infrared illuminator is in use, the camera can switch to COLOR or B/W mode, via DNI pin of the communication connector.

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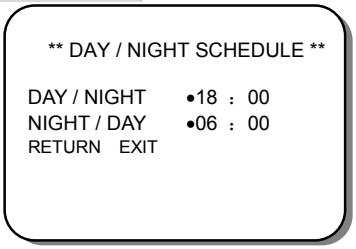
***SCHEDULE***




**Sub-Menu under the *DAY / NIGHT SCHEDULE* mode**

When the *SCHEDULE* function is selected, the camera will automatically switch between COLOR and B&W modes according to the preset time.

•*DAY/NIGHT*: set the timing to switch from *DAY/COLOR* to *NIGHT/B&W.*

•*NIGHT/DAY*: set the timing to switch from *NIGHT/B&W* to *DAY/COLOR.*

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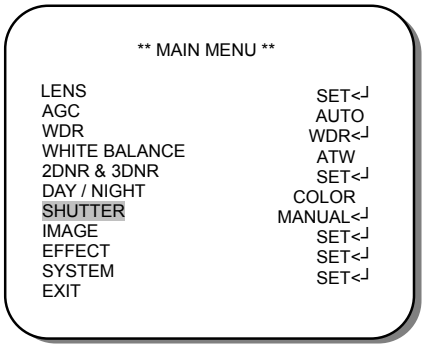
## 4.7 SHUTTER




There're 3 modes repetitively for 2 situations under this function:

*MANUAL, AUTO, DAY/NIGHT*
(when the *DAY / NIGHT* function has set to *AUTO, EXTERNAL,* or *SCHEDULE* mode),

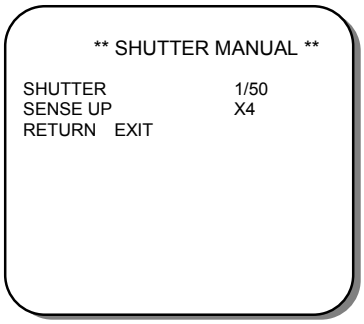
or

*MANUAL, AUTO, SCHEDULED SHUTTER*
(when the *DAY / NIGHT* function has set to *COLOR* or *B&W* mode.)

When the DAY / NIGHT function has set to AUTO, EXTERNAL, or SCHEDULE mode: *MANUAL, AUTO,* and *DAY/NIGHT* modes are available under the *SHUTTER* function.

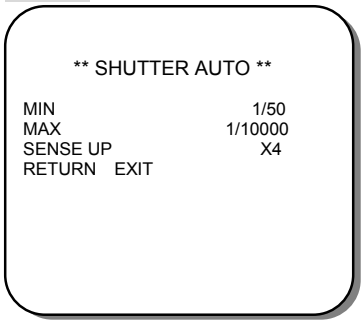
1. Please use the UP and DOWN buttons to *SHUTTER* on the MAIN MENU and press the ENTER button to enter.
2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.
3. *SENSE-UP* is used to maintain a brilliant, vivid screen image by automatically detecting changes in the level of light under low light level conditions. Select the desired item and press LEFT and RIGHT buttons to adjust the settings. The options are *x2, x4, x8, x16, x32, x64, x128, x256, x512*, and *OFF*.

***MANUAL**




There're 16 speed types under the *SHUTTER MANUAL* mode: 1/50(60), 1/120(100), 1/200, 1/250, 1/350, 1/500, 1/750, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000, 1/10000, 1/30000, 1/60000, 1/100000
SENSE UP only works when the Shutter is at PAL: 1/50 (NT:1/60).

***AUTO**




The *MINIMUM* and the *MAXIMUM* of the SHUTTER SPEED can be set under *AUTO* mode. The *MINIMUM* can be set from 1/50(60) to 1/60000 and the *MAXIMUM* can be set from 1/120 (100) to 1/100000.
SENSE UP only works when the Shutter is at PAL: 1/50 (NT:1/60).

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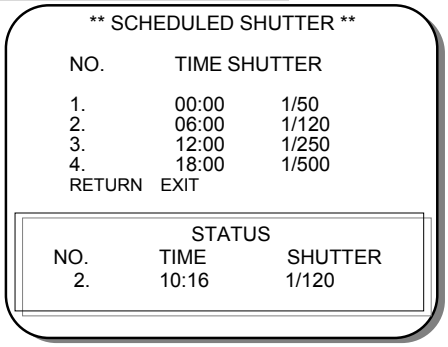
***DAY/NIGHT***

When the DAY / NIGHT function is set to AUTO, EXTERNAL, or SCHEDULE mode, you can set DAY SHUTTER and NIGHT SHUTER individually.

The *DAY SHUTTER and the NIGHT SHUTTER* can be set in 16 steps..

***SCHEDULED SHUTTER***




There're 16 speed types to choose from. Shutter can be changed according to the set schedule; up to 4 different schedules can be set.

The current status shows the actual time and the working shutter speed.

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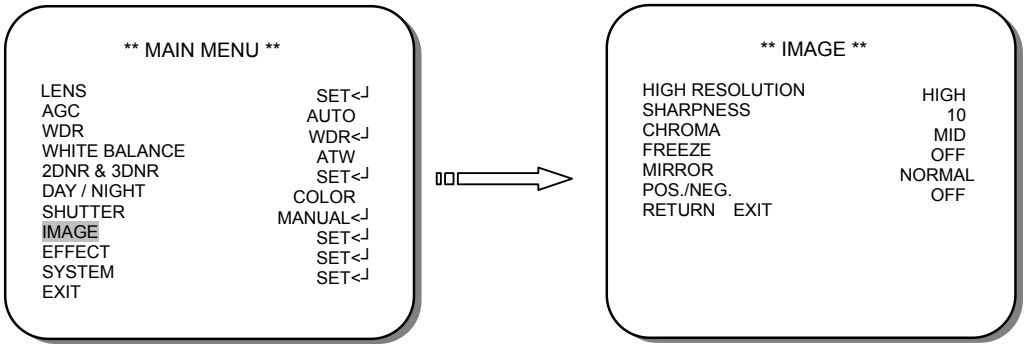
## 4.8 IMAGE




**Sub-Menu under the Image Function**

1. Please use the UP and DOWN buttons to *IMAGE* on the SETUP MENU and press ENTER button to enter.
2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.

***HIGH RESOLUTION***

Options are *HIGH, MID, LOW, and OFF.*

***SHARPNESS***

Level 0~15. The contour of the video image becomes cleaner and more distinguished as the level of SHARPNESS increases. If the level goes up extremely, it may affect the video image and cause noise.

***CHROMA***

Options are *HIGH, MID, LOW*.

***FREEZE***

*ON/OFF*. When set as *ON*, the screen holds still for a clear view.

***MIRROR***

*NORMAL, VERTICAL* (vertical rotated), *MIRROR* (horizontal rotated), and *ROTATE* (vertical and horizontal rotated).

***POS. / NEG.***

*ON/OFF.* Positive/Negative Reversal. Select *ON* or *OFF* to enable or disable this function.

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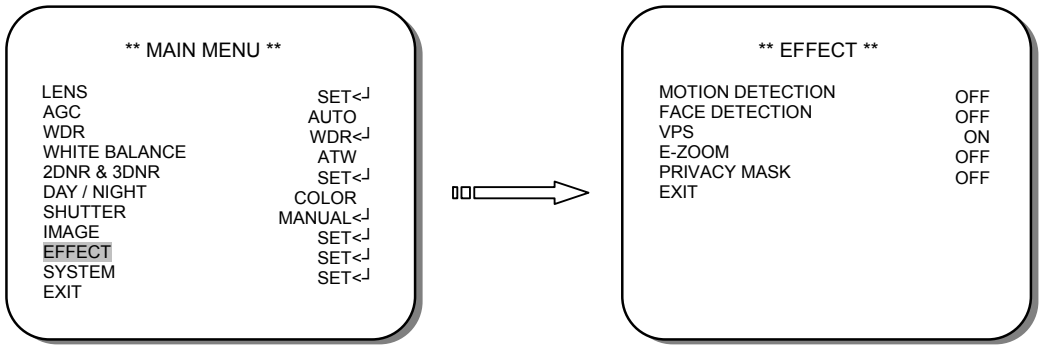
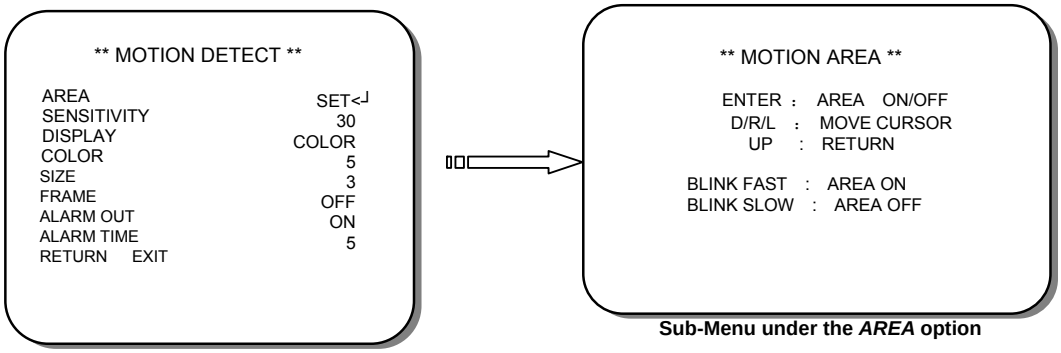
## 4.9 EFFECT




1. Please use the UP and DOWN buttons to *EFFECT* on the MAIN MENU and press ENTER button to enter.
2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.

**** MOTION DETECTION***

*Options are ON/OFF.* When *MOTION DETECTION* is set as *ON*, there're several submenus under this function:




**Sub-Menu under the *AREA* option**

•*AREA:* There're sub-menus under this option. Press the ENTER button to do the further settings.

1) Press SET to display the on-guard areas or press ENTER again to hide the on-guard areas.
2) Press DOWN, RIGHT, LEFT buttons to do the selection.
3) Press UP button to return to the previous page.
4) When the on-guard block blinks fast, this indicates the on-guard AREA will be shown on the screen; while it blinks slowly, the protected AREA will be hided from the screen.

•*SENSITIVITY:* Sensitivity can be set from *1* to *32*. The higher the number, the more sensible the camera can be.

•*DISPLAY:* Options are in *COLOR*, in *INVERSE* or *OFF*.

•*COLOR:* 16 colors to choose from, *RED PURPLE, PINK, RED, DARK YELLOW, LIGHT YELLOW, LIGHT GREEN, GRASS GREEN, DARK GREEN, WATER BLUE, BABY BLUE, BLUE, PURPLE, WHITE, LIGHT GRAY, DARK GRAY,* and *BLACK.*

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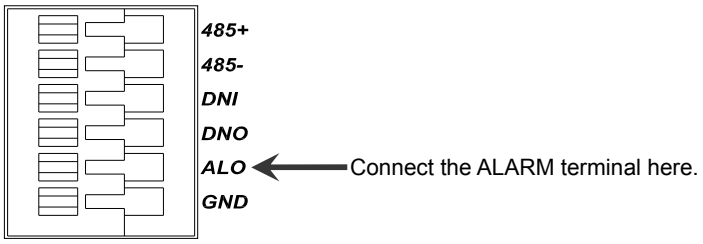
•*SIZE:* Size of the block can be adjusted from *1* to *15*; the higher the number, the bigger the block can be.

•*FRAME:* Choose *ON* to display block only in frame, or *OFF* to display a whole block.

•*ALARM OUT:* Choose *ON* to output the alarm; connect the alarm device to the ALO of the communication port on the rear panel so that the alarm can be output. Be sure to turn off all the power before connecting.




•*ALARM TIME:* Alarm time can be set from *1* to *60* seconds.

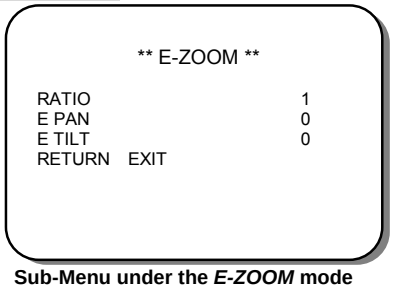
### * FACE DETECTION

*ON/OFF*, when set as *ON*, there're up to 4 Faces Detections available.

### * VPS

Virtual Progressive Scan *ON/OFF.*

### * E-ZOOM



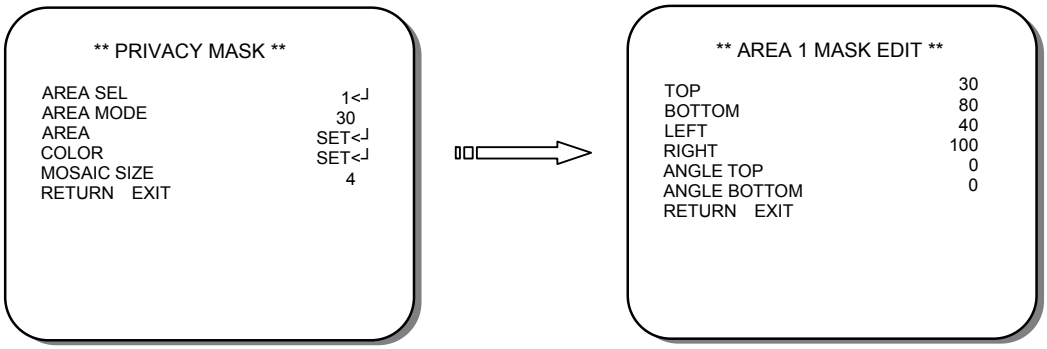

**Sub-Menu under the *E-ZOOM* mode**

When *VPS* set as *ON*, this *E-ZOOM* mode is available, press Enter button to do further setups.

Options are *RATIO 1x~256x* (zoom in 1 to 256 times), *E PAN -15~16* (horizontal zoomed-in viewing), and *E TILT -15~16* (vertical zoom-in viewing).

### * PRIVACY MASK

*ON/OFF*, when *PRIVACY MASK* is set as *ON*, there're several submenus under this mode:




•*AREA SEL:* There're *1-16* areas which can be masked.

•*AREA MODE:* Choose *ON* to show the protected area on the screen, *OFF* to hide the protected area on the screen.

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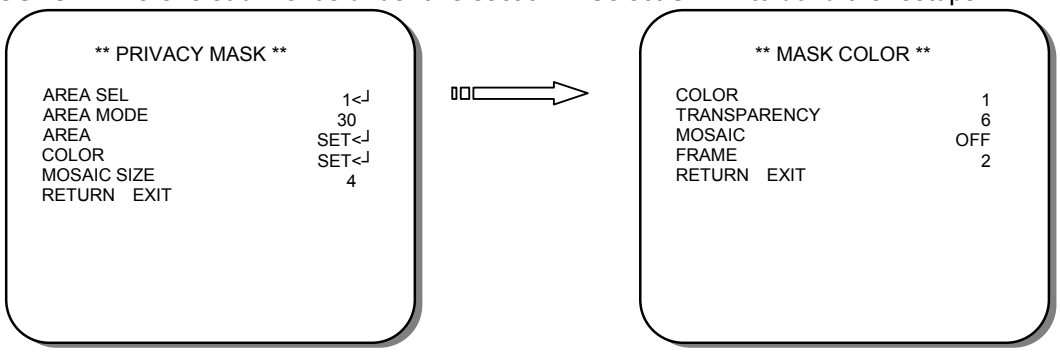
•*AREA:* There're sub-menus under this mode. Press ENTER button to do further setups. Set the area size and shape here. The bigger the number, the bigger the block size can be. Polygon shapes can also be created by adjusting ANGLE TOP and ANGLE BOTTOM.

•*COLOR:* There're sub-menus under this section. Select SET↵ to do further setups.




1) *COLOR*: There're 16 colors available. *RED PURPLE, PINK, RED, DARK YELLOW, LIGHT YELLOW, LIGHT GREEN, GRASS GREEN, DARK GREEN, WATER BLUE, BABY BLUE, BLUE, PURPLE, WHITE, LIGHT GRAY, DARK GRAY,* and *BLACK.*
2) *TRANSPARENCY:* the block can also be transparent. The bigger the number, the more transparent the block can be.
3) *MOSAIC: ON/OFF*. To display the block in mosaic or not.
4) *FRAME:* Frame thickness can be set. The bigger the number, the thicker the frame of the block can be.

•*MOSAIC SIZE:* The mosaic density can be set; the bigger the number the vaguer the block can be. Use LEFT and RIGHT buttons to adjust.

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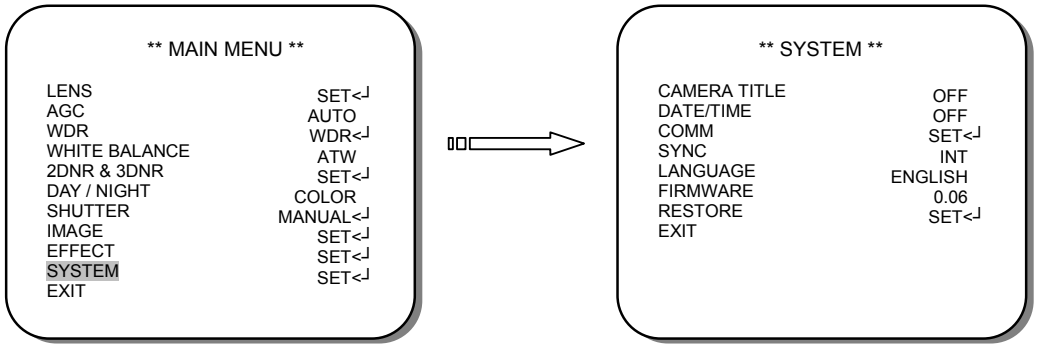
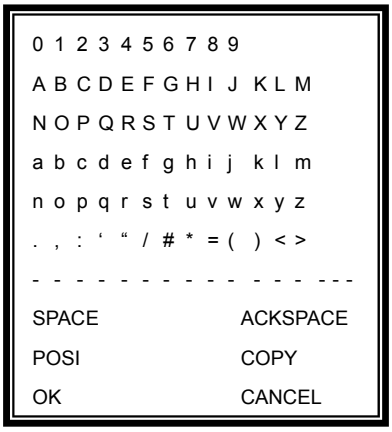
## 4.10 SYSTEM

1. Please use the UP and DOWN buttons to *SYSTEM* on the MAIN MENU.




2. Please select the desired item and press LEFT and RIGHT buttons to adjust the settings.

**** CAMERA TITLE***




Numbers, letters and symbols can be used for naming the camera title.

*Use direction buttons to select the desired character.

*Press SET button to confirm each selection.

*Use the direction buttons to OK to confirm the setting.

*Use the direction buttons to CANCEL to abort the setting.

*Select POSI to change the position of the shown camera title.

*Select SPACE when a blank / a space is needed.

*Select BACKSPACE to clear the precedent character.

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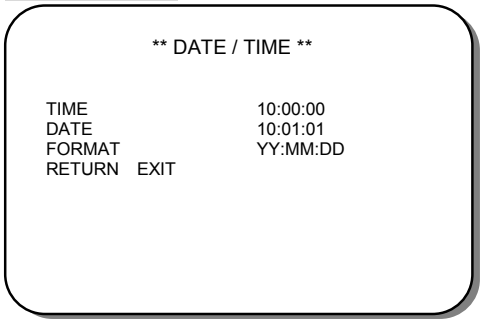
**** DATE / TIME***




HH: Hour, MM: Minute, SS: Second, YY: Year, MM: Month, DD: Date.
Select ON/OFF to show/hide the Date/Time on the screen.

**** COMM***

There're sub-menus under this section. Select SET↵ to do further setups.

1. The CAM ID, PROTOCOL and BAUD RATE will be displayed for the first five seconds on boot.
2. Changes made to the CAM ID, PROTOCOL and BAUD RATE will only take effect after you exit the COMM page. This is to prevent the camera from unexpected disconnecting caused by remote access.

•*CAM ID:* 1~1024
•*DISP CAMERA ID:* ON/OFF (*Select ON/OFF to show/hide the CAM ID on the screen.)
•*PROTOCOL:* PELCO-D, PELCO-P
•*BAUD RATE:* 2400/4800/9600/19200/38400

**** SYNC***

•*INT:* Internal synchronization
•*LL:* External line-lock synchronization: when LL is selected, press the ENTER button to confirm. The phase can be set from *0* to *359*.

**** LANGUAGE***

•*ENGLISH* •*简体中文* •*繁體中文*
Use the LEFT & RIGHT buttons to select the language preference.

**** FIRMWARE***

Please refer to the actual firmware.

**** RESTORE***

Please choose *CANCEL* to exit; once the *CONTINUE* is chosen, all the settings will be restored to the defaults except for the following: *CAM ID*, *PROTOCOL*, *BAUD RATE* and *LANGUAGE*.

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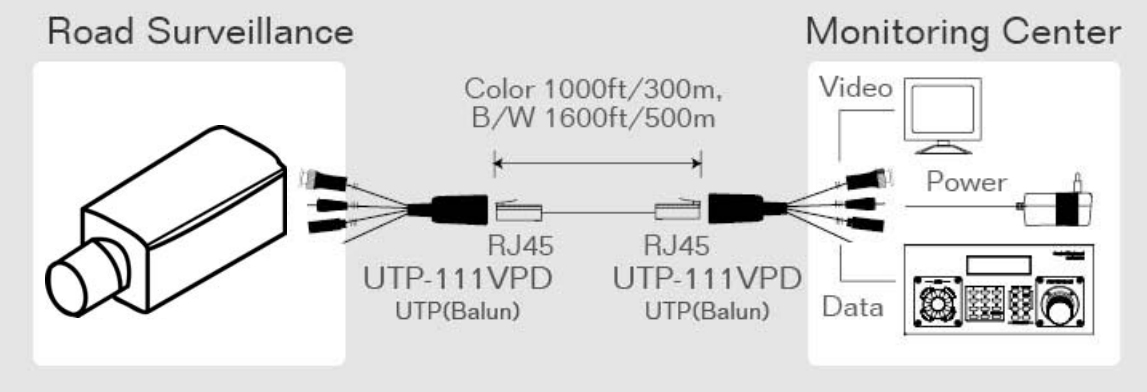
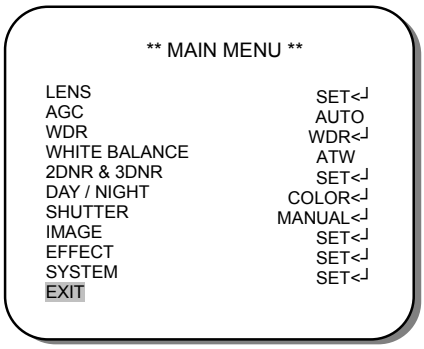
## 4.11. Balun Function (UTP)

A Balun's function is used on these cameras. It would normally require 3 terminals (Video + Power + RS485) to succeed a connection. However, via Balun, 1 is sufficient. The cameras OSD can be used and controlled remotely via RS485 communication port. The most important thing is transmission can still stay clear and true.




## 4.12. EXIT

Select EXIT to leave the MENU.

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